

## II. ALTERNATIVES ANALYSIS

### A. OVERVIEW OF THE ALTERNATIVE SELECTION PROCESS

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This is a unique and complex study because the proposed action crosses an international border and waterway. The border between the United States and Canada in this area is located roughly in the middle of the St. Croix River.

MDOT, in consultation with the FHWA, has coordinated its efforts with the proponents of the portion of the overall action in Canada. These include the NBDOT, the CCRA, and Citizenship and Immigration Canada. MDOT not only assessed the needs of the Study Area (in Maine), but also considered the needs, requirements, and policies of NBDOT and their Canadian partners in the planning, development, and analysis of alternatives.

NBDOT's process for planning, developing, and analyzing alternatives is different from the process derived from compliance with an integrated decision-making process for STPA and NEPA compliance. NBDOT creates a 300 m (984 ft.) wide corridor where they envision a road being built. Detailed fieldwork is performed in this corridor, and an alternative is developed within the corridor based upon the results of the fieldwork. For this study, the NBDOT considered preliminarily two corridors to match the build alternatives retained for further consideration in Maine at the border between the two countries.

MDOT and NBDOT, each in consultation with those whom they are responsible to in each country, must identify a Preferred Alternative that would meet at a common location at the border and fulfill the needs, requirements, and policies of each country. Both MDOT and NBDOT have adapted their normal planning and study processes to achieve this objective.

In addition to considering its own highway and bridge requirements, and those of NBDOT, MDOT also considered the needs and requirements of the GSA. The GSA is a cooperating agency under NEPA, for a new border crossing inspection facility. To satisfy the Purposes and Needs of the GSA, approximately 8 to 10 ha (20 to 25 ac.) of land would be required to accommodate an inspection facility of sufficient size to allow its tenants to fulfill their missions and function efficiently. A GSA-owned inspection facility was part of the planning and design of each alternative.

Public involvement and outreach was an important component of the study. In Maine, a PAC was assembled with representatives from the various local organizations and communities. The purpose of the PAC was to meet periodically with the study team to provide insight to local and regional issues and concerns. NBDOT and other Canadian partners attended and participated in the PAC meetings. The general public was encouraged to attend PAC meetings and participate in the question and answer sessions at the end of each meeting. Two public meetings were held to inform the general public of the progress of the study and to solicit feedback.

The social and natural environmental features in the Study Area were identified prior to developing alternatives (Environmental Baseline Study, October 2000). Using this information and input from the PAC, alternatives that satisfied the Purpose and Needs of the study were identified and developed to avoid and minimize impacts to the social and natural environmental features to the extent possible.

A range of reasonable transportation strategies and alternatives were developed in accordance with the STPA and NEPA. When developing the alternatives, two important factors were considered: (1) the existing Ferry Point and Milltown bridges would remain in place and would allow vehicle traffic 24 hours a day, but would no longer allow truck traffic to cross, and (2) all trucks must use the new border crossing facility and inspection station.

The reasonable strategies and alternatives were screened by their ability to satisfy the study Purpose and Needs. Alternatives that satisfied the study Purpose and Needs were further screened using the U.S. Army Corps of Engineers (ACOE), *New England District's Highway Methodology*. The preliminary impacts to the social features in the Study Area were considered. Matrices were developed that tabulated the preliminary environmental and social impacts and facilitated the preliminary screening and analysis of the alternatives. The results of this analysis were used to dismiss alternatives from further consideration and to document the reasons for their dismissal.

The results of the preliminary alternatives screening and analysis were presented to the regulatory and resource agencies that attended MDOT's monthly interagency coordination meeting on July 11, 2000. The agencies present concurred with the range of alternatives considered and the preliminary alternatives screening and analysis.

The alternatives retained for further consideration were studied in greater detail, and additional information was collected and analyzed. The potential direct, indirect, secondary and cumulative impacts for the alternatives retained for further consideration are presented in Section IV — Environmental Consequences and Mitigation.

## **B. MAINE SENSIBLE TRANSPORTATION POLICY ACT ANALYSIS**

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In accordance with the STPA, transportation strategies that satisfy the study Purpose and Needs were considered. They were: transportation system management, travel demand management, and technology associated with intelligent transportation systems.

### **1. Transportation System Management**

Transportation system management (TSM) consists of small highway and intersection improvements and operational strategies designed to improve traffic flow through an area. TSM improvements may reduce or delay the need for costly improvements and upgrades that would be necessary if no action were taken. The most common TSM improvements available to smaller communities such as Calais involve the construction of turn lanes at intersections and improvements to traffic control.

The specific TSM improvements considered were:

- Signal timing improvements at the intersection of Main Street and North Street in downtown Calais,
- Reconstruction of the eastbound approach of North Street to Route 1 from the Milltown Crossing. Specifically, reconstructing the right turn lane to separate turning traffic from traffic accessing the Texaco gas station on this corner.
- Construction of additional turn lanes at the intersection of Route 1 and Route 9 in Baileyville.

TSM improvements were not considered in detail at the Ferry Point Crossing due to the limited availability of space to make minor capacity improvements without disrupting or displacing existing commercial businesses. Improvements to the border crossing facility that could improve traffic flow would require major modifications to the GSA-owned inspection facility.

## **2. Travel Demand Management**

Travel demand management (TDM) consists of strategies to reduce demand for travel during periods of peak traffic flow through an area. TDM strategies normally attempt to accomplish one of two goals:

- Remove vehicle trips from highway network, or
- Shift trips from periods of high traffic demand to periods of lesser traffic demand.

Ridesharing programs and improvements to transit networks are two TDM strategies that seek to remove vehicles from highways. Strategies to shift traffic from periods of high demand to periods of low demand include such programs as encouraging employers to offer flexible work hours.

TDM strategies work best in areas with a high concentration of commuter traffic during defined peak periods. Traffic congestion in the Calais region is caused by recreational and commercial trips that do not start or stop in the region, but are delayed by the insufficient processing capacity at the border crossing facilities. The nature of this travel demand makes it difficult to manage traffic through TDM strategies.

## **3. Intelligent Transportation Systems/Commercial Vehicle Operations**

The purpose of intelligent transportation systems (ITS) is to provide the users and operators of transportation facilities with information regarding current or anticipated travel conditions. With this information, motorists may adjust their trips accordingly by choosing an alternate route or delaying their arrival at a congested segment of highway. Operators of transportation facilities use this information to respond to incidents in a timely manner, shortening the duration of congestion caused

by crashes and other incidents. Commercial vehicle operations (CVO) are a subset of ITS that specifically deal with the application of ITS technologies to improve the efficiency of CVO.

Traffic information is transmitted to the public through the use of various devices. Changeable or variable message signs, highway advisory radio, and local radio traffic reports are the most common methods for transmitting information to motorists in their cars.

Given the purpose of the international border crossing and limited size of the facility, ITS strategies at the Ferry Point Crossing were not considered.

#### **4. Strategies Warranting Further Analysis During Final Design**

MDOT, FHWA, and GSA have committed to revisiting the use of ITS/CVO strategies as part of the scope of the Preferred Alternative during the final design stage.

### **C. ALTERNATIVES**

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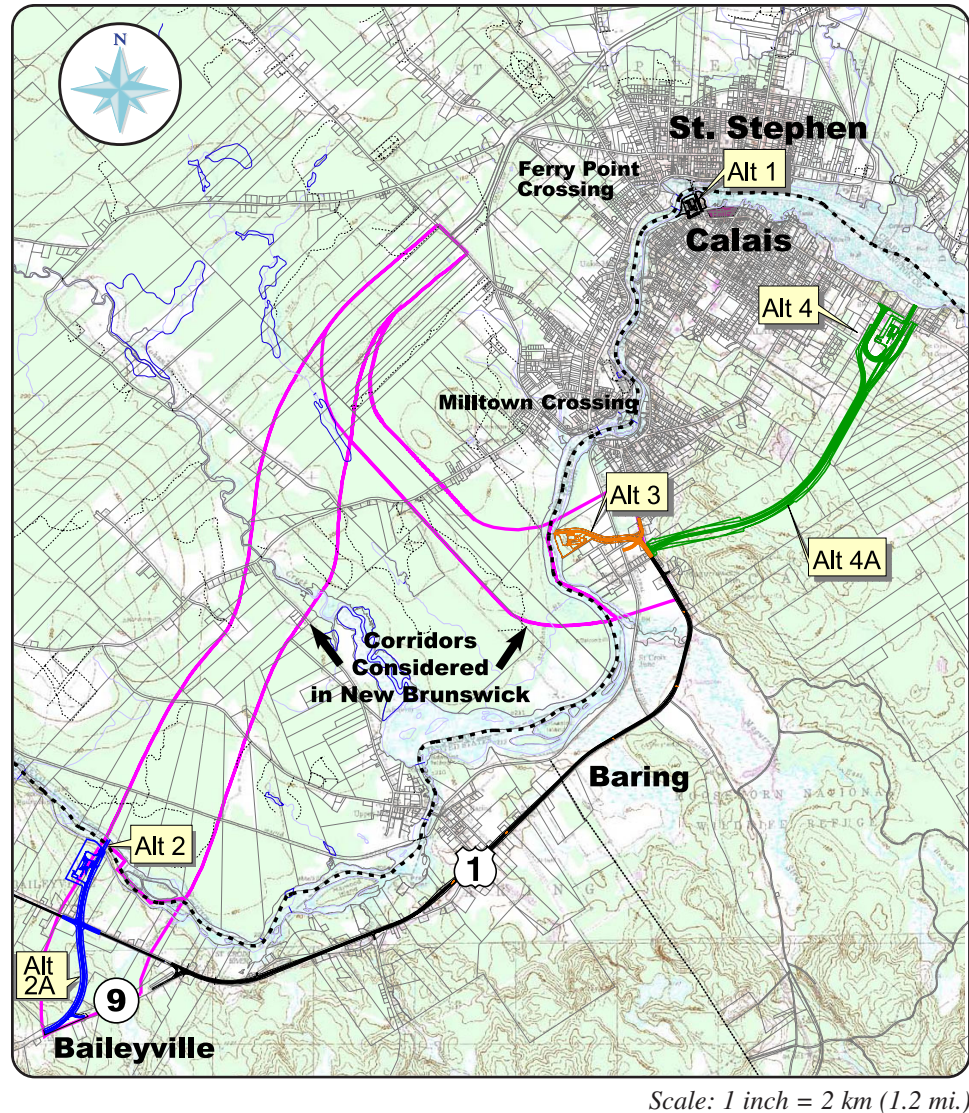
A reasonable range of alternatives was developed in accordance with STPA and NEPA (Figure II-1, next page). Each of the build alternatives include a highway approach to a bridge, a bridge in the St. Croix River to the international border, and approximately 8.1 ha (20 ac.) for a GSA-owned inspection facility. Each of the build alternatives was developed in coordination with NBDOT and the CCRA.

Following the preliminary screening of alternatives, three alternatives were retained for further consideration: the No-build Alternative, Alternative 2A, and Alternative 3 (Table II-1, page II-6). Alternatives 2A and 3 satisfy the study Purpose and Needs. The No-build Alternative was retained to show the extent of traffic congestion and freight delay that would occur in the future if no action were taken. These alternatives were carried forward for more detailed preliminary engineering and environmental studies. The alternatives retained for further consideration have the consensus of the PAC and the concurrence of the federal and state regulatory and resource agencies.

#### **1. The No-build Alternative**

The No-build Alternative assumes that no new construction or major reconstruction would occur to the highway systems and inspection facilities in the Study Area, and that the present level of maintenance on the Ferry Point Crossing, highways in the Study Area, and GSA-owned facilities at the Ferry Point and Milltown Crossings would continue at the present levels. It was further assumed that staffing levels of the U.S. Customs Service at the GSA-owned facilities at the Ferry Point and Milltown Crossings would remain unchanged.

Without new construction, there would be no appreciable change to the current highway and traffic operating conditions. Consequently, there would be no improvement in system linkage, traffic congestion, inspection facilities, freight delay, or safety. The existing problems would not be corrected, and as traffic volumes increase, would worsen over time.




































**Figure II-1, Build Alternatives 1, 2, 2A, 3, 4 and 4A**

## 2. Alternative 2A — Connection Near Route 9

Alternative 2A is a modification of Alternative 2 (which was dismissed from further consideration [See Section II- C-5-b — Alternative 2 — Connection Near Route 9]). Alternative 2A is an alternative on new alignment approximately 1,829 m (6,000 ft.) long, consisting of the construction of a two-lane highway approach, bridge over the St. Croix River and a GSA-owned inspection facility on an approximately 20.2 ha (50 ac.) parcel near the intersection of Route 9 and Route 1 (Figure II-2, page II-7). Four travel lanes would be constructed through the inspection facility and the intersection with Route 1.






While originally suggested to form a four-way intersection with Route 9 (as Alternative 2), this alternative was located to the northwest of the existing intersection of Route 1 and Route 9 in an area that minimizes impacts to Waters of the U.S. and floodplains and provides sufficient area for the GSA-owned inspection facility.

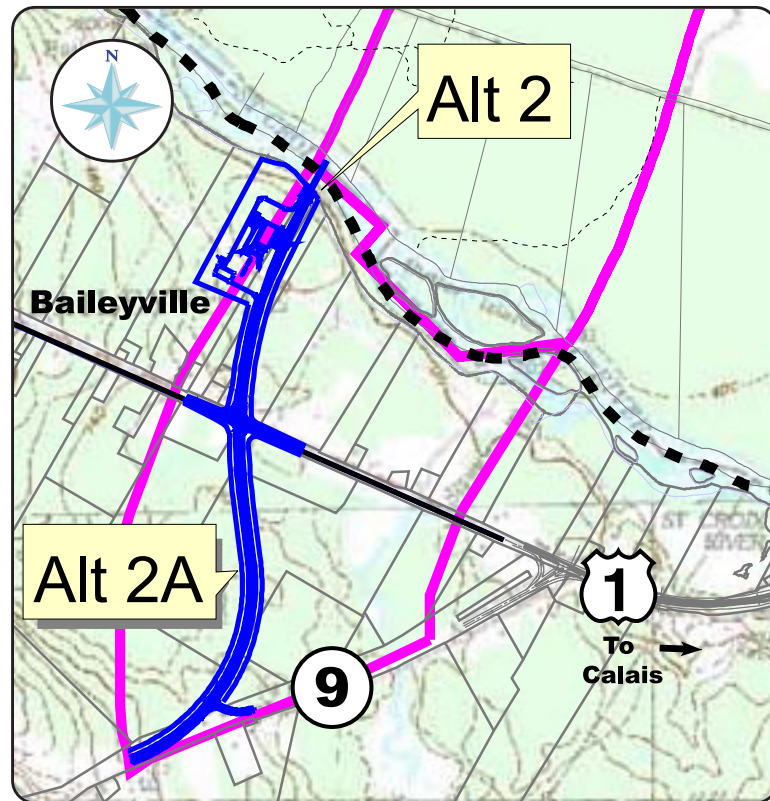
**Table II-1, Comparison of Alternatives to Study Purpose and Needs**

	Purpose Satisfied		Needs Fully Satisfied	Needs Unsatisfied (or Partially Satisfied)
	Yes	No		
No-Build Alternative		✓		    
Alternative 1	✓		  	 
Alternative 2	✓		    	
Alternative 2A	✓		    	
Alternative 3	✓		    	
Alternative 4	✓		  	 
Alternative 4A	✓		 *    	

\*Alternative 4A satisfies system linkage in Maine, but would require a connection in New Brunswick other than the terminus of the existing bypass of St. Stephen.

**LEGEND**

System Linkage.....		Hazardous Materials.....	
GSA-Owned Facility.....		Freight Delay.....	
Traffic Congestion.....			

**Figure II-2, Alternatives 2 and 2A**

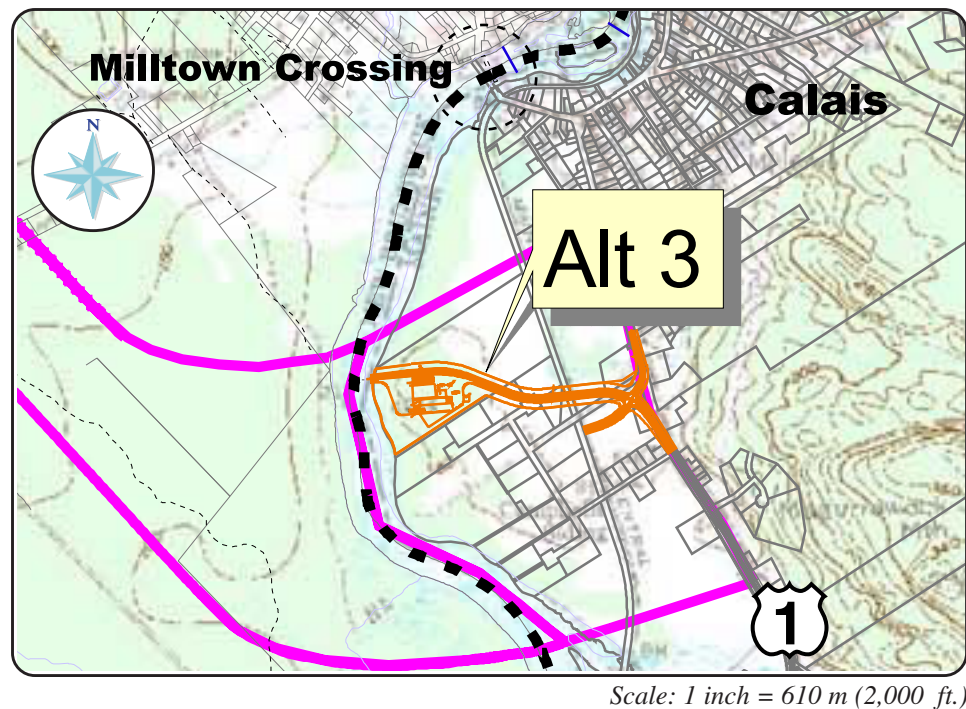
Scale: 1 inch = 610 m (2,000 ft.)

Following detailed analysis, Alternative 2A was shifted an additional 396 m (1,300 ft.) to the north and west to avoid direct impacts to the Butler Islands (located in New Brunswick at the request of the Passamaquoddy Tribe), to reduce wetland and floodplain impacts in New Brunswick, and to cross the St. Croix River at a narrower location, thus reducing the length of the bridge over the river. The estimated savings in construction costs to both MDOT and NBDOT is approximately 3 million dollars (U.S. dollars). This shift in the location of Alternative 2A increases the impact to wetlands (in Maine) from approximately .9 ha (2.2 ac.) to 1.0 ha (2.5 ac.).

### 3. Alternative 3 — Connection Near the Calais Industrial Park

Alternative 3 is an alternative on new alignment approximately 914 m (3,000 ft.) long consisting of the construction of a bridge over the St. Croix River and a GSA-owned inspection facility within and adjacent to the Calais Industrial Park (Figure II-3, next page). Alternative 3 is located in and adjacent to a largely undeveloped portion of the industrial park to minimize impacts to waterways, wetlands, and existing commercial and residential development. This alternative would consist of the construction of a new GSA-owned facility on approximately 10.9 ha (27 ac.), an at-grade crossing of the Calais Branch rail line within the industrial park, and a new four-way signalized intersection with Route 1.

**Figure II-3, Alternative 3**



Throughout the study process, changes have been made to Alternative 3 to avoid and minimize impacts. Originally, Alternative 3 would have impacted the majority of the Calais Industrial Park. The alternative was shifted to the north to avoid the majority of the industrial park. The alternative was subsequently modified to avoid and minimize impacts to Waters of the United States.

Four travel lanes would be constructed through the GSA-owned inspection facility to a new, four-way intersection with Route 1. This four-lane highway would taper to match the existing two-lane section of Route 1. MDOT would develop an acquisition plan to help ensure that Route 1 could be widened to four lanes between the Calais Industrial Park and Route 9, a distance of approximately 8.0 km (5 mi.), when traffic warrants.

#### **4. Associated Actions**

Regardless of the alternative identified as the Preferred Alternative for satisfying the Purpose and Needs of this study, the outcome of this study would play an integral role in MDOT's efforts to improve east-west travel across the state. An improved border crossing would play an important part, along with other transportation improvements identified in the state of Maine's East-West Highway, in maintaining and improving the long-term competitive position of the region.

The Canadian government and province of New Brunswick are in the process of completing construction of a four-lane limited access highway from Halifax, Nova Scotia to St. Stephen, New Brunswick. Completion of this limited access highway would provide improved access to and from the east of St. Stephen.

## **5. Alternatives Considered but Dismissed from Detailed Analysis**

### **a. Alternative 1 — Upgrade Alternative**

Alternative 1 is the upgrade alternative and would consist of the reconstruction of the GSA-owned inspection facility at the Ferry Point Crossing and several improvements to existing roads in the Study Area. These road improvements include:

- Reconstructing of a portion of Union Street approaching the traffic signal and the intersection with Main Street and North Street to make the approach less steep,
- Reconstructing the intersection of Route 1 to the immediate east of the Milltown Bridge to define the right turn lane,
- Reconstructing the intersection of Route 1 and Charlotte St. (the entrance to the Moosehorn National Wildlife Refuge via Route 1) to lengthen the through lanes and provide longer acceleration/deceleration lanes on Route 1.

Alternative 1 was dismissed from further consideration because it would not satisfy the study needs of system linkage and safety. This alternative would require the permanent acquisition of the majority of Ferry Point, displacing approximately 8 residences and 10 commercial businesses. Alternative 1 would directly impact the Calais Waterfront Park and walkway — a publicly-owned property protected under Section 4(f) of the U.S. Department of Transportation Act of 1966.

### **b. Alternative 2 — Connection Near Route 9**

Alternative 2 is an alternative on new alignment approximately 853 m (2,800 ft.) long consisting of the construction of a bridge over the St. Croix River and a GSA-owned inspection facility near the intersection of Route 1 and Route 9 (Figure II-2, page II-7). Four travel lanes would be constructed through the GSA-owned inspection facility to Route 1. While originally suggested to form a four-way intersection with Route 9, this alternative was shifted to the northwest of the intersection of Route 1 and Route 9 in an area that minimizes impacts to Waters of the U.S. and provides sufficient area for the GSA-owned inspection facility. Alternative 2 would consist of the construction of a new GSA-owned inspection facility on an approximately 10.9 ha (27 ac.) parcel with highway frontage on Route 1.

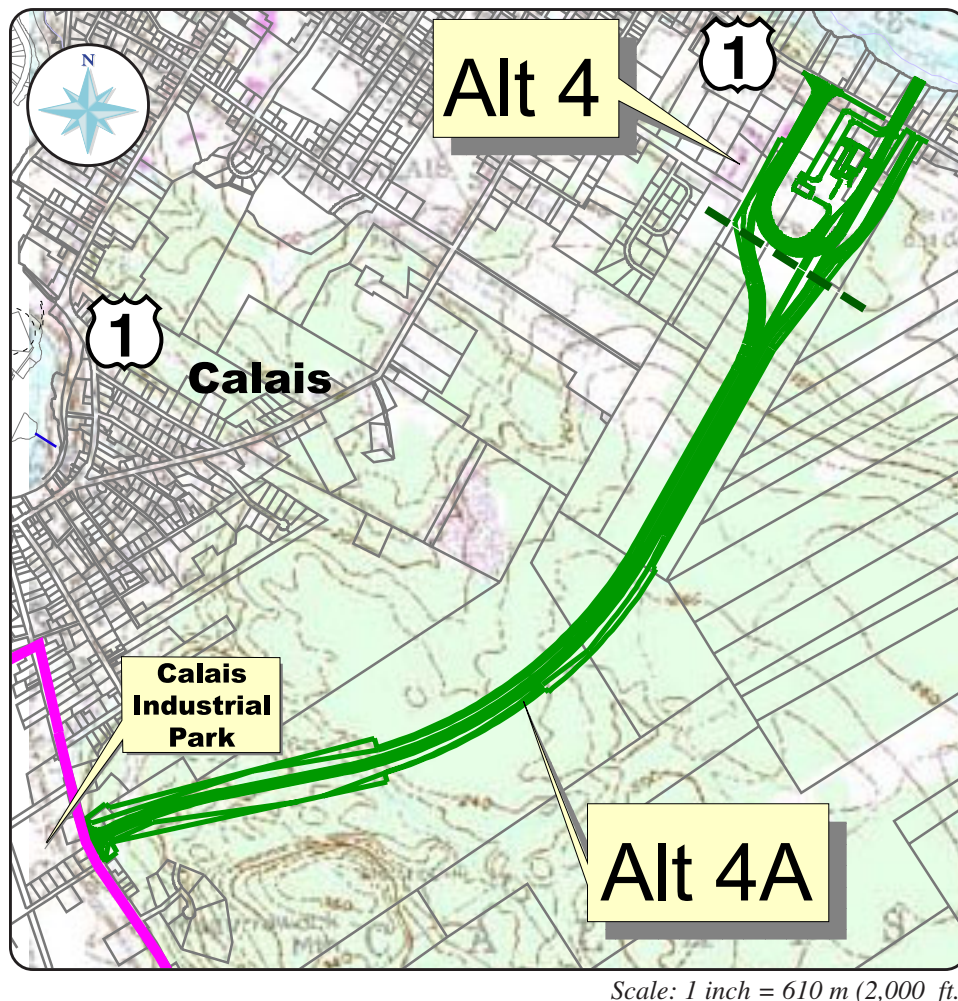
Although Alternative 2 satisfies the study Purpose and Needs, it was dismissed from further consideration because it impacted the Butler Islands, an area of concern to the Passamoquoddy Tribe. Additionally, it is less desirable and efficient, in terms of VMTs and VHTs, than Alternative 2A.

### **c. Alternatives 4 and 4A — Bypass East of Calais**

Alternative 4 is an alternative on new alignment approximately 914 m (3,000 ft.) long consisting of the construction of a bridge over the St. Croix River and a GSA-owned inspection facility to the east of Calais (Figure II-4, next page). Due to limited space between the St. Croix River and Route 1, this alternative was developed with a bridge over Route 1 and consists of the construction of a new GSA-

owned inspection facility on an approximately 21.4 ha (53 ac.) parcel between the United Methodist Church and the St. Croix Country Club golf course. Loop ramps were designed to provide access via Route 1.

**Figure II-4, Alternative 4 and 4A**



One modification of Alternative 4 was developed. Alternative 4A would consist of Alternative 4 with an approximately 3.2 km (2 mi.) highway connection to Route 1 near the Calais Industrial Park.

Alternative 4 was dismissed from further consideration because it would not satisfy the study needs of system linkage and safety. This alternative would not use the logical termini —the western end of the bypass of St. Stephen— previously identified as a requirement by NBDOT. In addition, Alternative 4 would require the acquisition of approximately 21.4 ha (53 ac.) of property, displacing 9 residences and the city-owned property and building being converted to a home for abused children. In addition, Alternative 4 would consist of a significant crossing of the St. Croix River, representing a substantial cost and visual intrusion. Alternative 4 would

result in substantially greater impacts to Waters of the U.S. than other alternatives retained for further consideration. Alternative 4 would increase the level of noise experienced by residents of this portion of Calais.

Alternative 4A was dismissed from further consideration because other alternatives existed that satisfied the study Purpose and Needs with less impact to the social and natural environments of the Study Area. Alternative 4A would result in the same impacts to the social and natural environment as Alternative 4. In addition, Alternative 4A would require the acquisition and conversion of approximately 45.7 ha (113 ac.) of primarily forested area for transportation and government uses, and it would impact approximately 2.3 ha (5.8 ac.) of wetlands.

**d. Stud Mill Road Alternative**

The construction of a highway between Baileyville and Old Town using Stud Mill Road was suggested at the Public Scoping and Informational Meeting on April 26, 2000. Conceptually, this alternative would require a substantial upgrade of approximately 90.1 km (56 mi.) of Stud Mill Road. On the western end of Stud Mill Road, it would require the construction of a new crossing of the Penobscot River, approximately 4.8 km (3 mi.) of highway on new alignment, and a new interchange on I-95 north of Old Town. On the eastern end of Stud Mill Road, it would require the construction of approximately 19.3 km (12 mi.) of highway on new alignment and a new crossing of the St. Croix River to the north of Baileyville.

The Stud Mill Road Alternative was dismissed from further consideration because other alternatives existed that satisfied the study Purpose and Needs with substantially less impact to the social and natural environments of the Study Area. Although a preliminary cost estimate was not prepared, other alternatives existed that satisfied the study Purpose and Needs at a substantially lower estimated cost.

**e. Foley Road Alternative**

This alternative is an alternative partially on new alignment on Foley Road from the point where it intersects Route 9 to where it intersects Route 1, a section of road on new alignment, a new GSA-owned inspection facility on approximately 10.1 ha (25 ac.), and a bridge over the St. Croix River. This alternative is several miles longer than Alternative 2A.

The Foley Road alternative was dismissed from further consideration because a similar alternative exists (Alternative 2A) that satisfied the study Purpose and Needs, but at a lower cost and with fewer impacts. Additionally, due to topography, the NBDOT could not connect a road to this alternative within the limits of their design criteria.

**f. Calais Branch Alternative**

The rehabilitation of the Calais Branch rail line was suggested as a reasonable alternative at the public meeting held on December 6, 2000. This alternative would consist of rehabilitating the Calais Branch and completing a rail connection to the port of Eastport to substitute rail freight movement for truck freight movement in the Calais area.

The Calais Branch Alternative was dismissed from further consideration because it did not satisfy the study Purpose and Needs for a new GSA-owned facility or system linkage. According to a 1997 MDOT feasibility study, it would cost approximately \$75 million to rehabilitate the Calais Branch. The rehabilitation of the rail line would not be sufficient to replace truck freight movement with rail, and an intermodal center and other accommodations would need to be constructed. Rehabilitation does not insure that truck traffic would be removed from the Ferry Point Crossing. The varied origin and destination points of truck traffic would make universal substitution of truck freight movement for rail movement unlikely.

**g. Variation of the Build Alternatives**

Designating the new border crossing as a “trucks-only” route was considered, as a variation of the build alternatives, and dismissed from further consideration. Designating either Alternative 2A or 3 as a truck-only route would not satisfy the Purpose or Needs of the study, for passenger vehicles, of poor system linkage, an inefficient GSA-owned inspection facility, and traffic congestion.

Three truck-only border crossings exist in the United States. The border crossing at Laredo, Texas processes approximately 1.5 million trucks per year. The border crossing at Otay Mesa, California processes approximately 750,000 trucks per year. The border crossing at Blaine, Washington processes approximately 550,000 trucks per year. The Ferry Point and Milltown Crossings process approximately 162,000 vehicles per year combined.

A truck-only crossing would require passenger vehicles to exit a new highway and rejoin at another location. The three existing truck-only crossings require *trucks* to exit the primary highway and rejoin at another location. Based on the location and configuration of the two build alternatives retained for further consideration, a truck-only route could require passenger vehicles to be rerouted up to approximately 16.4 km (10.2 mi.).

MDOT has a long-standing policy of making transportation improvements available to all legal vehicle traffic; this policy was placed into Rule affirming the basic right of all highway users to travel on all state and state-aid highways in Maine (29-A MRSA § 102). MDOT recognizes that there is an affirmative right for all individuals and entities, public and private, domestic or commercial, to travel on all state or state aid highways. This right exists until the Commissioner of MDOT suspends or otherwise restricts any such traffic on highways under MDOT jurisdiction.

The primary tenant of the GSA-owned inspection facility is the U.S. Customs Service. For the U.S. Customs Service, creating a truck-only crossing would not satisfy their need for an improved inspection facility. Although uncertain, according to the U.S. Customs Service, they would not be able to obtain addition staff necessary to staff a truck-only facility while maintaining adequate staffing at the other two border crossings at this time. Staffing is not available to have truck-only personnel dedicated to staff a new border crossing. The other tenants of the GSA-owned in-

spection facility would experience similar difficulties in obtaining additional staff to fulfill their respective agency's missions (40 CFR 1502.22 — Unavailable Information) (U.S. Customs Service 2001).

Creating a truck-only crossing would likely not result in improvements to the existing inspection facilities at the Ferry Point and Milltown Crossings. The existing inspection facilities are inadequate for law enforcement and the processing of passenger vehicles at the present volume of passenger vehicles; this problem will worsen over time as traffic volumes increase under this scenario.

## **D. SUMMARY OF PREDICTED EFFECTS**

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### **1. Introduction**

Prior to the alternative identification and analysis phase of the study, key natural and social features were identified and presented to the PAC and the regulatory and resource agencies to facilitate the initial identification, development and screening of the build alternatives. Fieldwork was completed and additional information was collected in accordance with the ACOEs — New England District's Highway Methodology.

### **2. Environmental Impact Matrix**

One tool used to preliminary screen and evaluate the range of reasonable alternatives developed to satisfy the study Purpose and Needs was the collection of data to support the ACOE — New England District's Highway Methodology. The purpose of the Highway Methodology is to integrate the ACOE's Section 404 permitting requirements under the Clean Water Act (CWA) with the planning and engineering mandate of the NEPA process to ensure the retention of only "permissible" alternatives, and to support the dismissal of other alternatives. Data required for the Highway Methodology focused primarily on impacts to natural resources, including Waters of the U.S., wildlife, aquifers, floodplains, wells, farmlands, historical and archaeological resources, and environmental risk sites.

Preliminary natural environmental impacts were assessed only for those alternatives that satisfied the study Purpose and Needs (Table II-2, page II-15). The No-build Alternative does not satisfy the study Purpose or Needs. Alternatives 1 and 4 do not fully satisfy the study Needs. The Stud Mill Road Alternative satisfied the study Purpose and Needs; however, this alternative was dismissed from detailed analysis due to substantial social and natural impacts in comparison to other alternatives that also satisfy the study Purpose and Needs. The Foley Road Alternative had not been developed prior to the preliminary screening of alternatives, but was subsequently considered at a comparable level of detail.

### **3. Social/Economic Impact Matrix**

An additional matrix identifying the preliminary impacts of the alternatives to socioeconomic resources was developed (Table II-3, page II-16). This matrix identifies the preliminary impacts on land use, displacements, community facilities and ser-

vices, pedestrian and bicycle use, air quality, and parks and recreation lands. The impacts to community characteristics, economic characteristics, noise, secondary impacts, and cumulative effects had not been developed prior to the preliminary screening of alternatives. While this information was not needed to screen alternatives, it was developed for the alternatives retained for detailed studies.

#### **4. Preliminary Cost Estimate**

The anticipated costs for the construction of alternatives retained for further consideration were developed in support of the evaluation of alternatives. The anticipated costs include the highway improvements and one half of an international bridge. The costs do not include a new GSA-owned facility because that cost is a constant between both build alternatives.

Alternative 2A would cost approximately \$6.8 million dollars to construct (year 2001 dollars). Alternative 3 would cost approximately \$7.1 million dollars to construct. The future cost of access management and the widening of Route 1, from the Calais Industrial Park to Route 9, to four lanes when traffic levels require, would be approximately \$10 to \$15 million dollars. The total cost of Alternative 3 would be approximately \$17 to 22 million dollars (year 2001 dollars). Based upon MDOT traffic forecasts, the widening of Route 1 to four lanes would not be required in the short term.

Table II-2, Natural Environment and Cultural Resource Impacts of the Preliminary Alternatives Considered

Alternatives	Satisfy Purpose		Satisfy Needs		Waters of the U.S.				Wildlife		Aquifers		Floodplains ha(ac)	Community Wells Directly Impacted: (each)	Farmlands			Archaeological		Historic Properties Directly Impacted: (each)	Environmental Risk Sites Directly Impacted: (each)
	Yes	No	Yes	No	NWI** & Hydric Soils: ha(ac)	NWI**/Hydric Soils: ha(ac)	# of Wetland Impacts: (each) ha(ac)	Water Crossings Impacted	Undeveloped Wildlife Habitat: ha(ac)	Notable Wildlife Habitat: ha(ac)	Surface Area Impacted: ha(ac)	High Yield Aquifers ha(ac)			Active Farmland: ha(ac)	Prime Farmland Soils: ha(ac)	Soils of Statewide Importance ha(ac)	Sensitive Areas Impacted: (each)	Previously Recorded Sites Impacted: (each)		
No Build		✓		✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Transportation System Management (TSM)		✓		✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Intelligent Transportation Systems/Commercial Vehicle Operations (ITS/CVO)		✓		✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Stud Mill Road Alternative *	✓		✓		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alternative 1																					
Alternative 1—Upgrade Alternative	✓			✓ x	0 (0)	0 (0)	0 (0)	0	0 (0)	0 (0)	4.5 (11.2)	0 (0)	0.8 (2.0)	0	0 (0)	0 (0)	0 (0)	—	—	—	0
Alternative 2 - New Alignment Near Route 9																					
Alternative 2—With Frontage on U.S. Route 1	✓		✓		3.6 (9.0)	0.8 (2.0)	3 0.9 (2.3)	1	9.8 (24.2)	0 (0)	11.0 (27.1)	0 (0)	0 (0)	0	0 (0)	5.1 (12.6)	0 (0)	—	—	—	0
Alternative 2A—With a Connection to State Route 9	✓		✓		4.8 (11.8)	0.8 (2.0)	4 1.0 (2.5)	1	10.8 (26.8)	0 (0)	18.4 (45.4)	0 (0)	0 (0)	0	0 (0)	5.9 (14.6)	0 (0)	—	—	—	0
Alternative 3—New Alignment at Calais Industrial Park																					
Alternative 3—New Alignment within Calais Industrial Park	✓		✓		0.1 (0.3)	0 (0)	2 0.1 (0.3)	1	0.7 (1.7)	0 (0)	7.1 (17.6)	7.1 (17.6)	1.3 (3.2)	0	0 (0)	4.5 (11.2)	0 (0)	—	—	—	0
Alternative 3A—New Alignment adjacent to Calais Industrial Park	✓		✓		2.3 (5.7)	0 (0)	5 2.3 (5.7)	1	16.7 (41.3)	0 (0)	17.2 (42.6)	0 (0)	3.4 (8.5)	0	0 (0)	0.4 (1.0)	0 (0)	—	—	—	0
Alternative 4—New Alignment East of Calais																					
Alternative 4—With Frontage on U.S. Route 1	✓			✓ x	0.1 (0.3)	0 (0)	1 0.1 (0.3)	1	12.5 (31.0)	0 (0)	21.4 (52.9)	0 (0)	0 (0)	0	0 (0)	13.6 (33.7)	4.0 (9.8)	—	—	—	0
Alternative 4A—With a Connection to U.S. Route 1	✓		✓		3.4 (8.5)	1.3 (3.2)	8 2.3 (5.8)	1	45.7 (113.5)	0 (0)	55.9 (138.2)	1.1 (2.6)	0 (0)	0	0 (0)	4.2 (10.3)	16.1 (39.9)	—	—	—	0

\* This alternative was dismissed due to substantial impacts in comparison to other alternatives that satisfy the study Purpose and Needs

x Does not satisfy study need of System Linkage

Source: Adapted from "The Highway Methodology Workbook." U.S. Army Corps of Engineers—New England District. November 1993.

Table II-3, Social Impacts of the Preliminary Alternatives Considered

Alternatives	Satisfy Purpose		Satisfy Needs		Existing Land Use					Displacements	Community Characteristics	Economic Characteristics			Community Facilities and Services	Pedestrian, Bicycle, & Snowmobile Trails	Noise (impacted residences)	Air Quality	Public Parks and Recreation Lands	Secondary Impacts	Cumulative Impacts
	Yes	No	Yes	No	Commercial ha (ac)	Residential ha (ac)	Undeveloped ha (ac)	Other ha (ac)	Total ha (ac)			Local Road Main Cost	Tax Revenue Loss	Business							
No Build		✓		✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Transportation System Management (TSM)		✓		✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Intelligent Transportation Systems/Commercial Vehicle Operations (ITS/CVO)		✓		✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Stud Mill Road Alternative*	✓		✓		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alternative 1																					
Alternative 1—Upgrade Alternative	✓			✓ ×	0.9 (2.3)	0.2 (0.5)	0.9 (2.3)	2.5 (6.1)	4.5 (11.2)	8 residential; 10 commercial/ office; 4 other	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	1 Trail Crossing	—	No Impact	Direct Impact to Waterfront Park and Walkway	—	—
Alternative 2—New Alignment Near Route 9																					
Alternative 2—With Frontage on Route 1	✓		✓		0 (0)	10.8 (26.7)	0 (0)	0.2 (0.4)	11.0 (27.1)	1 residential/ commercial	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	1 Trail Crossing	—	No Impact	0	—	—
Alternative 2A—With a Connection to Route 9	✓		✓		0 (0)	10.8 (26.7)	7.0 (17.3)	0.5 (1.2)	18.3 (45.2)	1 residential/ commercial	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	1 Trail Crossing	—	No Impact	0	—	—
Alternative 3—New Alignment at Calais Industrial Park																					
Alternative 3—New Alignment within Calais Industrial Park	✓		✓		0.3 (15.6)	0 (0)	0.7 (1.8)	0.08 (0.2)	7.1 (17.6)	3 commercial	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	0	—	No Impact	0	—	—
Alternative 3A—New Alignment adjacent to Calais Industrial Park	✓		✓		0.04 (0.1)	0.2 (0.5)	16.5 (40.8)	0.5 (1.2)	17.2 (42.6)	2 residential	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	0	—	No Impact	0	—	—
New Alignment East of Calais																					
Alternative 4—With Frontage on Route 1	✓			✓ ×	0 (0)	8.2 (20.2)	9.2 (22.8)	0.4 (1.0)	21.4 (52.9)	11 residential; 1 institutional	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	1 Trail Crossing	—	No Impact	0	—	—
Alternative 4A—With a Connection to Route 1	✓		✓		0 (0)	8.9 (21.9)	45.7 (113.5)	1.1 (2.7)	55.9 (138.2)	11 residential; 1 institutional	—	—	—	—	Reduction in response times of emergency services and U.S. Border Patrol	2 Trail Crossings	—	No Impact	0	—	—

\* This alternative was dismissed due to substantial impacts in comparison to other alternatives that satisfy the study Purpose and Needs

× Does not satisfy the study need of System Linkage